

Name: _____

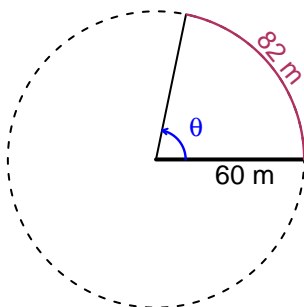
Date: _____

Trig Final (TEST v665)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

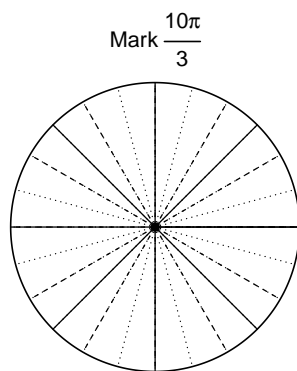
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 60 meters. The arc length is 82 meters. What is the angle measure in radians?

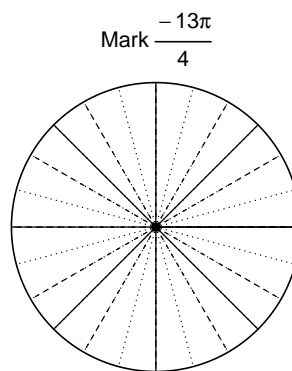


Question 2

Consider angles $\frac{10\pi}{3}$ and $\frac{-13\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{10\pi}{3}\right)$ and $\cos\left(\frac{-13\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin(10\pi/3)$



Find $\cos(-13\pi/4)$

Question 3

If $\cos(\theta) = \frac{12}{37}$, and θ is in quadrant IV, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 8.74 Hz, an amplitude of 6.92 meters, and a midline at $y = -5.49$ meters. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).